FLIGHT SUMMARY REPORT

Flight Number: 97-070

Calendar/Julian Date: 25 March 1997 • 084

Sensor Package: Wild-Heerbrugg RC-10
Dual Hycon HR-732
Thematic Mapper Simulator (TMS)

Area(s) Covered: Central California

Investigator(s): Functional Sensor Flight **Aircraft #:** 706

SENSOR DATA

Accession #:	05170	05171	05172	-----
Sensor ID #:	026	020	039	074
Sensor Type:	RC-10	HR-732	HR-732	TMS
Focal Length:	12” 304.97 mm	24” 609 mm	24” 609 mm	-----
Film Type:	Aerochrome IR SO-134	Aerochrome II MS 2448	Panatomic X Aerochrome II 2412	-----
Filtration:	Wratten 12	HF-3 + HF-5	Wratten 12	-----
Spectral Band:	510-900 nm	420-700 nm	510-700 nm	-----
f Stop:	11	14.2	8	-----
Shutter Speed:	1/275	1/250	1/250	-----
# of Frames:	19	35	34	-----
% Overlap:	60	60	60	-----
Quality:	Excellent	Good	Poor	-----
Remarks:	Camera clock offset from navigation data; subtract 21 seconds for correct GMT	Excessive filtration exposure “yellowed”; add 8 seconds for correct GMT	Soft focus and light leaks; subtract 2 seconds for correct GMT	

Airborne Science and Applications Program

The Airborne Science and Applications Program (ASAP) is supported by three ER-2 high altitude Earth Resources Survey aircraft. These aircraft are operated by the High Altitude Missions Branch at NASA-Ames Research Center, Moffett Field, California. The ER-2s are used as readily deployable high altitude sensor platforms to collect remote sensing and *in situ* data on earth resources, celestial phenomena, atmospheric dynamics, and oceanic processes. Additionally, these aircraft are used for electronic sensor research and development and satellite investigative support.

The ER-2s are flown from various deployment sites in support of scientific research sponsored by NASA and other federal, state, university, and industry investigators. Data are collected from deployment sites in Kansas, Texas, Virginia, Florida, and Alaska. Cooperative international scientific projects have deployed the aircraft to sites in Great Britain, Australia, Chile, and Norway.

Photographic and digital imaging sensors are flown aboard the ER-2s in support of research objectives defined by the sponsoring investigators. High resolution mapping cameras and digital multispectral imaging sensors are utilized in a variety of configurations in the ER-2s' four pressurized experiment compartments. The following provides a description of the digital multispectral sensor(s) and camera(s) used for data collection during this flight.

Thematic Mapper Simulator

The Daedalus Thematic Mapper Simulator (TMS) is a multispectral scanner flown aboard the ER-2 aircraft which simulates spatial and spectral characteristics of the seven Landsat-D Thematic Mapper bands. The specific bands are as follows:

Daedalus Channel	TM Band	Wavelength, *mm*
1	A	0.42 - 0.45
2	1	0.45 - 0.52
3	2	0.52 - 0.60
4	B	0.60 - 0.62
5	3	0.63 - 0.69
6	C	0.69 - 0.75
7	4	0.76 - 0.90
8	D	0.91 - 1.05
9	5	1.55 - 1.75
10	7	2.08 - 2.35
11	6	8.5 - 14.0 low gain
12	6	8.5 - 14.0 high gain

Sensor/aircraft parameters are as follows:

IFOV:	1.25 mrad
Ground Resolution:	81 feet (25 meters) at 65,000 feet
Total Scan Angle:	43^{o}
Swath Width:	8.4 nmi (15.6 km) at 65,000 feet
Pixels/Scan Line:	716
Scan Rate:	12.5 scans/second
Ground Speed:	400 kts (206 m/second)

Camera Systems

Various camera systems and films are used for photographic data collection. Film types include high definition color infrared, natural color, and black and white emulsions. Available photographic systems are as follows:

- Wild-Heerbrugg RC-10 metric mapping camera
  - 9 x 9 inch film format
  - 6 inch focal length lens provides area coverage of 16 x 16 nautical miles from 65,000 feet
  - 12 inch focal length lens provides area coverage of 8 x 8 nautical miles from 65,000 feet

- Hycon HR-732 large scale mapping camera
  - 9 x 18 inch film format
  - 24 inch focal length lens provides area coverage of 4 x 8 nautical miles from 65,000 feet

- IRIS II Panoramic camera
  - 4.5 x 34.7 inch film format
  - 24 inch focal length lens
  - 90 degree field of view provides area coverage of 2 x 21.4 nautical miles from 65,000 feet

The U.S. Geological Survey's EROS Data Center at Sioux Falls, South Dakota serves as the archive and product distribution facility for NASA-Ames aircraft acquired photographic and digital imagery. For information regarding photography and digital data (including areas of coverage, products, and product costs) contact EROS Data Center, Customer Services, Sioux Falls, South Dakota 57198 (Telephone: 605-594-6151).

Information regarding ER-2 acquired photographic and digital data is available through the Aircraft Data Facility at Ames Research Center. For specific information regarding flight documentation, sensor parameters, and areas of coverage contact the Aircraft Data Facility, NASA-Ames Research Center, Mail Stop 240-6, Moffett Field, California 94035-1000 (Telephone: 650-604-6252).

CAMERA FLIGHT LINE DATA
FLIGHT NO. 97-070

Accession # 05170

Sensor # 026

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	3956-3960	19:29:20	19:31:15	66922/20398	Clear
C - D	3961-3964	19:32:37	19:34:03	70000/21336	Clear
G - H	3965-3969	19:44:02	19:45:56	70000/21336	Clear
I - J	3970-3974	19:48:30	19:50:24	70000/21336	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 97-070

Accession # 05171

Sensor # 020

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0001-0009	19:28:51	19:30:49	67024/20429	Clear; light strike (frame 0009)
C - D	0010-0017	19:32:09	19:33:52	70000/21336	Clear; light strike (frames 0012-0017)
G - H	0018-0026	19:43:34	19:45:31	70000/21336	Clear; light strike (frames 0020-0021, 0026)
I - J	0027-0035	19:48:02	19:49:59	70000/21336	Clear

CAMERA FLIGHT LINE DATA
FLIGHT NO. 97-070

Accession # 05172

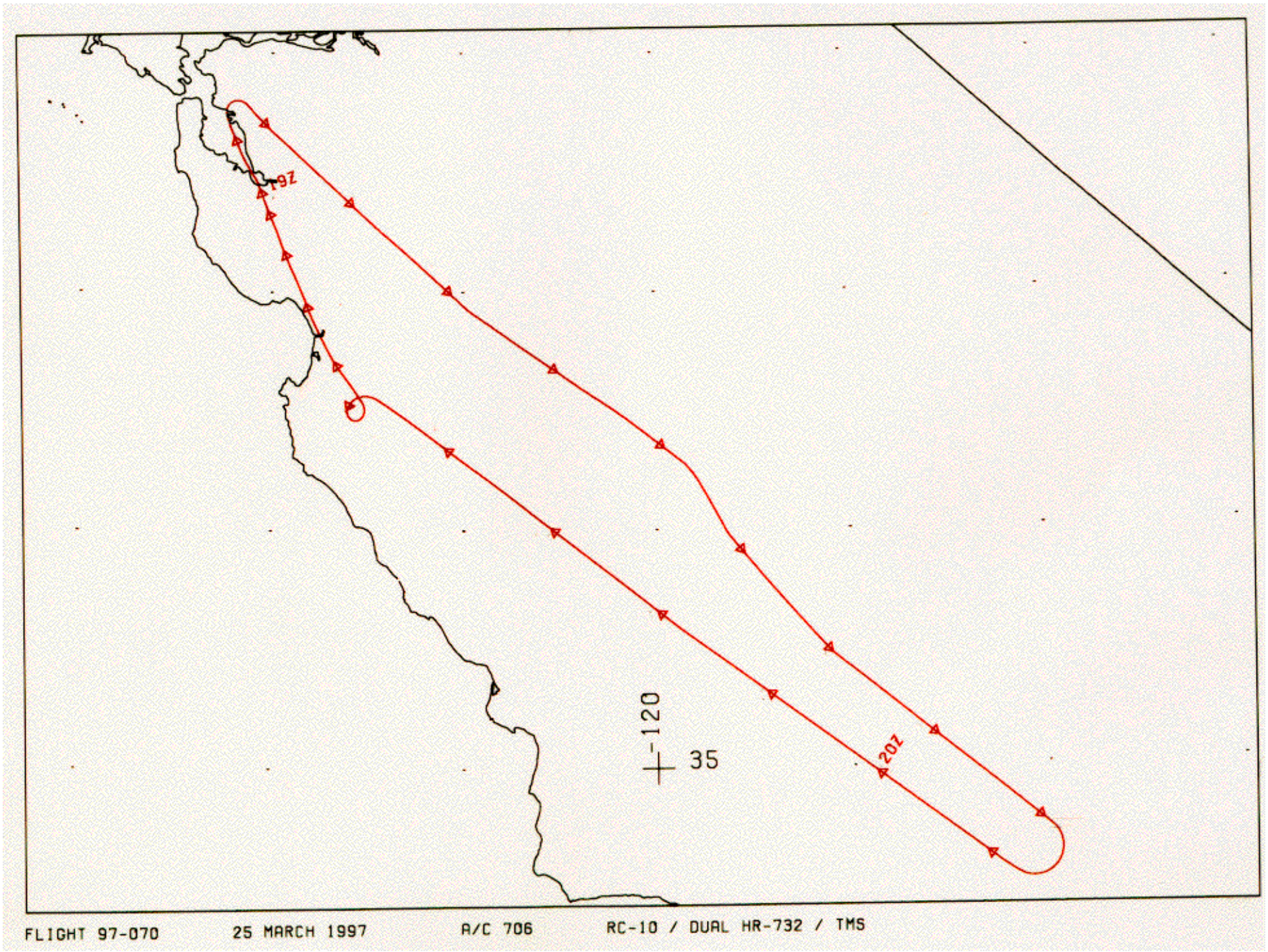
Sensor # 039

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	0002-0009	19:29:16	19:30:59	67094/20450	Clear; light strike (frames 0009)
C - D	0010-0017	19:32:19	19:34:02	70000/21336	Clear; light strike (frames 0010, 0017)
G - H	0018-0026	19:43:44	19:45:41	70000/21336	Clear; severe light strike (frames 0018, 0026)
I - J	0027-0035	19:48:12	19:50:09	70000/21336	Clear; severe light strike (frames 0027, 0035)

DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 97-070

Check Points	Actual time (GMT) begin	Actual time (GMT) end	Actual scanline begin	Actual scanline end	Altitude feet/meter	Scan Speed (rps)	total Good scanlines	total Interpolated scanlines	total Repeated scanlines
A-B	19:29:21	19:30:57	29279	30479	66000/20121	12.5	1201	0	0
C-D	19:32:17	19:33:53	31479	32679	68000/20731	12.5	1201	0	0
D-E	19:34:41	19:39:45	33279	37079	69000/21036	12.5	3801	0	0
F-J	19:40:49	19:50:25	37879	45079	70000/21341	12.5	7201	0	0
K-L	19:53:54	20:19:43	47679	67041	68000/20731	12.5	19363	0	0

Note: Altitude for K-L begins at 70000ft and ends at 55500ft


19Z
20Z
120
35
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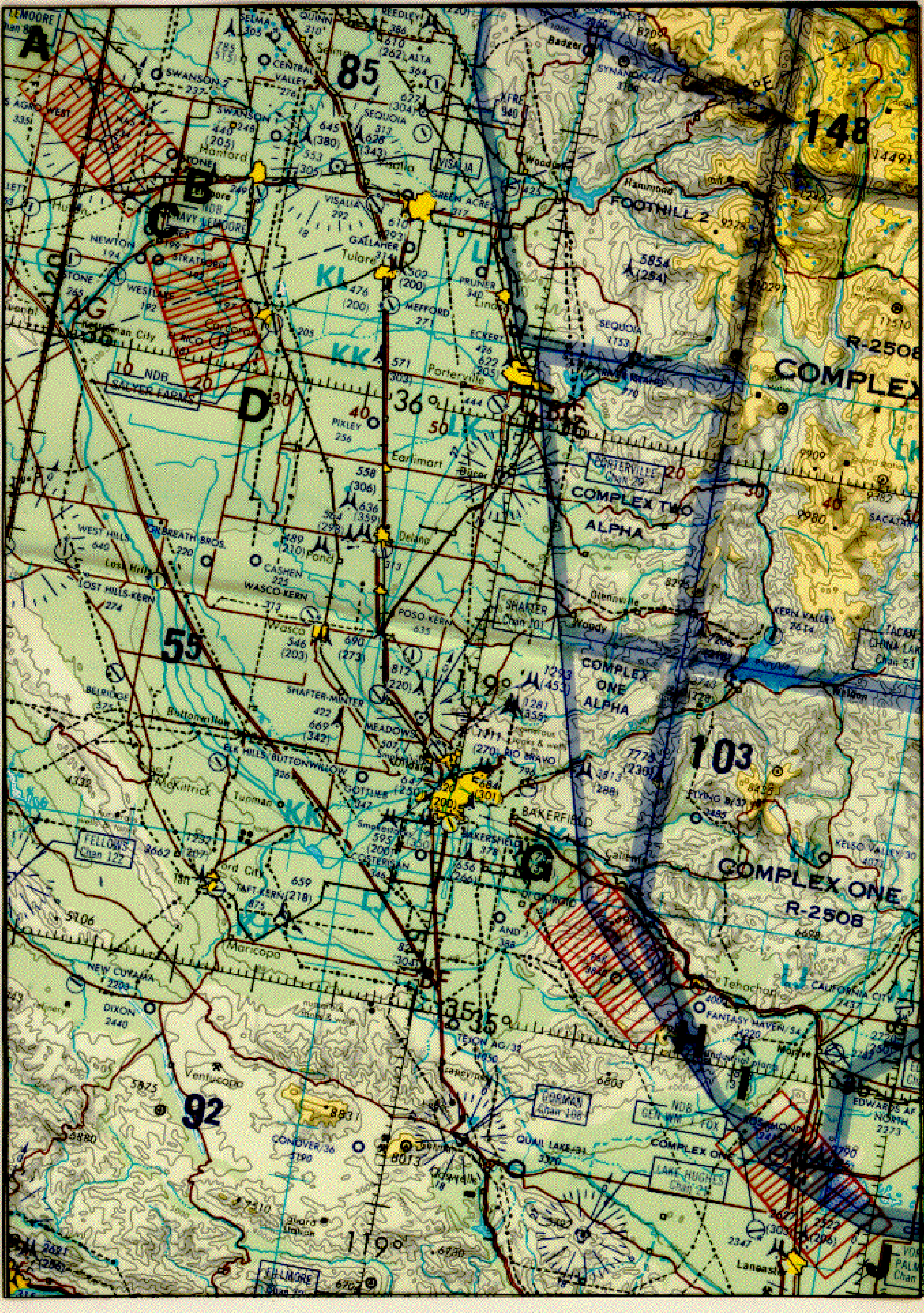
RC-10 / DUAL HR-732 / TMS



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